

**FURTHER DETAILS REGARDING MAIN TOPICS OF
PROGRAMME NO. 01/2016/ONLINE (Item No. 36)
ASSISTANT MANAGER
THE PLANTATION CORPORATION OF KERALA LIMITED
(CATEGORY No. 64/2014)**

PART I - FORESTRY

Module 1

Silvicultural characteristics of stands- growth of stands - even-aged and uneven- aged. Growth of trees in general - gross and net growth, height growth of trees - site quality - competition - seasonal weather conditions, silvicultural control of height growth. Growth of trees in diameter, factors affecting - site, stand density, release operations, age, crown class. Growth of trees in volume and value - advantages and disadvantages of rapid growth. Revised classification of forest types of India and their distribution. Forest types of Kerala

Study of important nursery pests and diseases and their control measures. Nursery practices for some important tree species. Plantations - definition and scope. - Plantation planning- National and regional planning-project appraisal and project implementation. - Plantation silviculture - Choice of species-concept of fast growth-exotics vs. indigenous- traditional vs. intensive forest management- Plantation establishment-essentials- ground preparation-Planting- -planting stock- planting pattern spacing-general planting rules-protection of newly planted seedling.- Plantation maintenance- death of seedling-weed control - pruning- Nutrition in plantations- nutrient deficiencies- symptoms of deficiency- use of fertilizers- dynamics of stand growth- Thinning- kinds and methods of thinning- Plantation records-plantation journal- sustainability of plantations- fast growing plantations-myths and reality- Industrial plantation- paper and pulp wood- Match wood plantation- plywood plantation- MFP plantation- tannin, resin and turpentine plantations- Energy plantation- high density short rotation plantations- petrocrops-energy from biomass.-Strip plantation-road side plantation- canal plantation- railway line plantation- Clonal plantations- development and management of clonal plantation. Development of plantations of economically important species like teak and eucalyptus

Measurement of abiotic factors - light, temperature, and precipitation. Vegetation sampling - quadrat method. Phytosociological analysis. Vegetation sampling - line transect method

Global warming- causes- impact of land use change. Kyoto mechanisms to mitigate global warming- LULUCF

Methods of seed collection. Fruit and seed handling - maintaining viability and identity- special precautions for recalcitrant seeds. Seed processing- operations prior to extraction- pre-cleaning, methods of extraction- operations after extraction- cleaning, grading and control of moisture level- factors affecting drying of orthodox seeds. Seed storage- definition- purpose, recalcitrant seeds- Harrington's rule of thumb, seed maturity- parental and annual effects. Storage condition and ageing of seeds. Storage methods. Storage containers.

Economic factors of plantation development- finance- labour- infrastructure, economic marketing-social and cultural effects. Plantations as potential carbon sinks- C sequestration; AR-CDM concepts.

Module 2

Volume tables- -preparation of volume tables-graphical method-regression method- Determination of growth of trees-Increment-CAI & MAI- increment percent-increment borer- Stump analysis- Stem analysis. Tree stem form-Metzgr's theory -form factor-types of form factor-form height for quotient-form class. Measurement of tree crops-objects-crop diameter-crop height-crop age-crop volume

Application of modern techniques in forest management : GIS , Remote sensing etc. History of forest legislation in India. Indian Forest Act, 1927, Kerala Forest Act, 1961, Kerala Private Forests (Vesting and Assignment Act), 1971. Kerala Preservation of Trees Act, 1986; Prevention of Cruelty to Animals Act, 1960. Forest (Conservation) Act, 1980 and rules 1981, Environment (Protection) Act, 1986 and amendments. Constitutional Provision for Safeguarding the Environment, Indian Penal Code, 1860 - Sections Relevant to Natural Resource Management, The Code of Criminal Procedure, 1974 - Sections Relevant to Natural Resource Management. Environmental Impact Assessment Notification, 1994 and amendments. The national Environment Tribunal Act, 1995. International Treaties Relevant to Conservation of Natural Resources. The Biological Diversity Bill, 2000. National Wildlife Action Plan, 2002

The macroscopic features of wood, sapwood, heartwood, pith, early wood, late wood, growth rings, wood rays, etc. Sapwood versus heart wood, anatomical differences. Transformation of sapwood to heartwood; factors affecting. Three dimensional features of wood; transverse, tangential and radial surfaces. Microscopic features of wood. Prosenchymatous elements, tracheids, vessels, fibers. Parenchymatous elements, parenchyma and rays, resin canals, gum canals, latex canals, infiltrants in wood. Wood

seasoning; merits, principles and types; air seasoning, kiln seasoning and chemical seasoning. Refractory classes of timbers, kiln schedules. Seasoning defects and their control. Wood preservation; principles, processes, need, types of wood preservatives (Water soluble, oil based, etc.). General idea about fire retardants and their usage. Nonpressure methods; steeping, dipping, soaking open tank process, Boucherie process. Pressure methods; full cell process, empty cell process (Lowry and Rueping). Wood machining. Sawing; techniques, kinds of saws; cross cut, edging, cudless, hand, circular and bow saws. Uses of wood. Primary conversion; sawing and veneering. Composite wood; plywood, laminated wood, core board, sandwich board, fibre board, particle board; manufacturing process, uses and properties. Adhesives used in manufacture of composite wood. Improved wood; compressed wood, impregnated wood etc.; manufacturing process, uses and properties

Biodiversity - origin of diversity - the ecological role of biodiversity - diversity and niche structure - human and species diversity - biodiversity hotspots. Endemism - rarity and extinction of species - causes of extinction. Biodiversity conservation - population variability - genetic drift - diversifying selection pressure. In situ conservation. National parks - sanctuaries. Biosphere concept. Biosphere reserves - reserve and protected forests. Ex situ conservation - role of botanical gardens in conservation. Conservation - efforts in India and worldwide.

Conservation - threatened birds of India with special reference to Western Ghats region - avian extinctions. Wildlife (Protection) Act, 1972. IUCN revised red list categories - Extinct, Extinct in the wild, Vulnerable, Near Threatened and Least concerned.

PART II – AGRICULTURE

Module 1

Important plantation crops-Coconut, Arecanut, Oil palm, Rubber, Cashew, Tea, Coffee, Cocoa, Black pepper, Cardamom, and other minor plantation crops of Kerala-Commercial importance, Origin, Distribution, area & production, botany and varieties.

Propagation techniques, nursery management, climate and soil, site selection, layout and planting Irrigation, manuring schedule, fertigation, moisture conservation methods, weed management,

Plant protection-Important pest and diseases, integrated pest and disease management, organic pesticides, Bio control agents.

Harvesting- Maturity indices, Yield and yield components, Tapping systems in rubber, cost benefit analysis, post harvest management- product diversification, value addition, grading, packaging and storage.

Role of commodity boards in development of plantation crops. Farm planning and budgeting, Farm inventory, methods of valuation of farm assets-depreciation, Agriculture price policy, Globalization and liberalization, Measures to improve marketing efficiency and tools for risk management, Marketing channels, Marketing management, balance sheet, Agro based industries, Public private partnership, Crop insurance schemes.

Module 2

Crop improvement methods in major plantation crops- floral biology, Hybridization techniques, hybrid varieties. clonal selection and mother tree selection.. Tissue culture techniques, IPR issues. Geographical Indicators, Plant Varieties and Farmers Right Act (2001), Seed Bill (2004).

Seed Physiology, Seed viability and vigour, seed germination seed dormancy, causes and measures to break dormancy. Plant water relation- Absorption and ascent of sap, transpiration, anti transpirants, water use efficiency, Biotic and abiotic stress factors and their management.

Role of nutrients -deficiency and toxicity symptoms, foliar nutrition, hydroponics, Physiological disorders in plantation crops. Plant pigments- Radiation use efficiency, source- sink relation.

Plant Growth Regulators-Mode of action, Commercial application, Photoperiodism and flowering, Senescence and Abscission.

PART III – MECHANICAL ENGINEERING

Module 1

Principles of IC engines - two stroke , four stroke, diesel, petrol, - engine components ,lubrication, cooling , ignition, electrical, - Functions & use of power tillers & tractors , capacities, manufactures , cost ,operation & maintenance of IC engines -

Essential farm implements used for homestead farming like, land preparation, levelling, bund formation, furrow forming, disc plow, rotovator, mini tiller, cultivator

Fodder harvesting machines, brush cutters, power weeders capacity , cost - machines used for harvesting coconut- arecanut , oil palm, its capacity basic principles - primary processing of coconut , arecanut, oil palm like drying value addition.

Module 2

Principles of mass, volume, velocity, Basic principles of surveying & levelling, various essential instruments used for surveying & levelling.

Basic principles of irrigation & drainage, sprinkler, drip, furrow, basin - soil plant water relationship percolation, infiltration, permeability, evaporation, salinity .various Instruments used for measuring these.

Open well, bore well, tube well, artesian well. Ground water recharge, check dams, water harvesting techniques, Water lifting devices for upland cultivation. suction head, delivery head, operation & maintenance of centrifugal pumps, submersible pumps, axial flow pumps.

PART IV – RUBBER TECHNOLOGY

Module 1

Various sources of natural rubber, history and development of Hevea Brasiliensis as the commercial source of natural rubber, present status and future prospects of rubber plantation industry in the world with particular emphasis on Indian context.

Latex-physical nature and chemical composition. Pre- coagulation and its prevention.

Theories of coacervation, short term and long term preservation.

Various marketable forms of natural rubber. Processing of latex into pre- served field latex and preserved latex concentrates, different methods used for concentration. Specification for concentrated latex and its grading, packing and transportation. Skim latex, production of skim rubber, its properties and uses. Processing of field latex into ribbed smoked sheets and their grading. Manufacture of various types of crepe rubber and their grading.

Module 2

Processing of the crop into technically specified block forms of rubber, different methods used block rubber production and their specifications. Processing of the crop into special types of rubbers and master batches.

Management of waste from rubber plantations: Effluents - characteristics, treatment methods and utilization of liquid waste. Solid waste - utilization.

By- products from rubber plantations: Rubber wood, rubber seed and honey.

Plantation management: Records to be maintained in rubber plantations. Various costs and revenues from rubber plantations. Channels of natural rubber marketing, government policy, role of rubber board. Labour requirement in rubber plantations, labour disputes, disciplinary actions, labour shortage, training and motivation.

PART V: GENERAL KNOWLEDGE, CURRENT AFFAIRS & RENAISSANCE IN KERALA

Salient Features of Indian Constitution

Salient features of the Constitution - Preamble- Its significance and its place in the interpretation of the Constitution.

Fundamental Rights - Directive Principles of State Policy - Relation between Fundamental Rights and Directive Principles - Fundamental Duties.

Executive - Legislature - Judiciary - Both at Union and State Level. - Other Constitutional Authorities.

Centre-State Relations - Legislative - Administrative and Financial.

Services under the Union and the States.

Emergency Provisions.

Amendment Provisions of the Constitution.

Social Welfare Legislations and Programmes

Social Service Legislations like Right to Information Act, Prevention of atrocities against

Women & Children, Food Security Act, Environmental Acts etc. and Social Welfare

Programmes like Employment Guarantee Programme, Organ and Blood Donation etc.

RENAISSANCE IN KERALA

Towards A New Society

Introduction to English education - various missionary organisations and their functioning- founding of educational institutions, factories, printing press etc.

Efforts To Reform The Society

(A) Socio-Religious reform Movements

SNDP Yogam, Nair Service Society, Yogakshema Sabha, Sadhu Jana Paripalana Sangham, Vaala Samudaya Parishkarani Sabha, Samathwa Samajam, Islam Dharma Paripalana Sangham, Prathyaksha Raksha Daiva Sabha, Sahodara Prasthanam etc.

(B) Struggles and Social Revolts

Upper cloth revolts, Channar agitation, Vaikom Sathyagraha, Guruvayoor Sathyagraha, Paliyam Sathyagraha, Kuttamkulam Sathyagraha, Temple Entry Proclamation, Temple Entry Act, Malyalee Memorial, Ezhava Memorial etc.

Malabar riots, Civil Disobedience Movement, Abstention movement etc.

Role Of Press In Renaissance

Malayalee, Swadeshbhimani, Vivekodayam, Mithavadi, Swaraj, Malayala Manorama, Bhashaposhini, Mathnubhoomi, Kerala Kaumudi, Samadarsi, Kesari, Al-Ameen, Prabhatham, Yukthivadi, etc

Awakening Through Literature

Novel, Drama, Poetry, *Purogamana Sahithya Prasthanam, Nataka Prashtanam*, Library movement etc

Women And Social Change

Parvathi Nenmenimangalam, Arya Pallam, A V Kuttimalu Amma, Lalitha Prabhu, Akkamma Cheriyan, Anna Chandi, Lalithambika Antharjanam and others

Leaders Of Renaissance

Thycaud Ayya Vaikundar, Sree Narayana Guru, Ayyan Kali, Chattampi Swamikal, Brahmananda Sivayogi, Vagbhadananda, Poikayil Yohannan (Kumara Guru) Dr Palpu, Palakkunnath Abraham Malpan, Mampuram Thangal, Sahodaran Ayyappan, Pandit K P Karuppan, Pampadi John Joseph, Mannathu Padmanabhan, V T Bhattathirippad, Vakkom Abdul Khadar Maulavi, Makthi Thangal, Blessed Elias Kuriakose Chavara, Barrister G P Pillai, TK Madhavan, Moorkoth Kumaran, C.

Krishnan, K P Kesava Menon, Dr.Ayyathan Gopalan, C V Kunjuraman, Kuroor Neelakantan Namboothiripad, Velukkutty Arayan, K P Vellon, P K Chathan Master, K Kelappan, P. Krishna Pillai, A K Gopalan, T R Krishnaswami Iyer, C Kesavan. Swami Ananda Theerthan , M C Joseph, Kuttippuzha Krishnapillai and others

Literary Figures

Kodungallur Kunhikkuttan Thampuran, KeralaVarma Valiyakoyi Thampuran, Kandathil Varghese Mappila. Kumaran Asan, Vallathol Narayana Menon, Ulloor S Parameswara Iyer, G Sankara Kurup, Changampuzha Krishna Pillai, Chandu Menon, Vaikom Muhammad Basheer. Kesav Dev, Thakazhi Sivasankara Pillai, Ponkunnam Varky, S K Pottakkad and others

GENERAL KNOWLEDGE AND CURRENT AFFAIRS

General Knowledge and Current Affairs

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.